Remarks

Claims 1 – 10, 13, 15, and 17 - 26 were pending in this application. The Non-Final Office Action mailed November 4, 2010 (hereinafter "Office Action") rejected claims 1, 2, 4 – 10, and 17 – 26 under 35 U.S.C. §103(a) as being unpatentable over non-patent literature Timeslider: An Interface to Specify Time Point (hereinafter "Koike") in view of US Patent Number 6,982,708 (hereinafter "Mah"). The Office Action also rejected claims 3 and 15 under 35 U.S.C. §103(a) as being unpatentable over Koike, in view of Mah, and in further view of US Patent Number 6,625,624 (hereinafter "Chen").

In response, Applicants have amended claims 1, 3 – 4 and 23; cancelled claims 8 – 10, 13, 15, 17 – 22, and 24 - 26; and added new claims 27 – 44. Accordingly, claims 1 – 7, 23, and 27 – 44 remain pending. Applicants respectfully submit that the present application is in condition for allowance.

The Present Invention:

The utility of the present invention [as claimed] is to provide a visualization and navigation tool for continuous data streams. The data streams are continuously analyzed for features of interest which are then visualized as features in a user interface. In addition, the invention generates aggregating features (e.g., a feature showing the number of occurrences of a certain event within the last minute), which use the same representation as point features and differ only in the way they are detected and computed.

Visualization can use either a coarse grain discrete time base (e.g., every cell represents one minute worth of data) or a more or less continuous time base, which will always be discrete,

even if the measurement steps are only milliseconds apart. Each row in the display represents one step in this time base.

Navigation in the data stream is performed by brushing. Detailed data about a time segment (one row) is displayed in a fold-out window displayed right next to the corresponding row. As data streams in it is possible to keep this fold-out window open at the very last row of data to show the most recent data.

To represent the continuous stream of data, the visualization grows upwards such that earlier data will be visualized further up. Even on large monitors the visualization will soon grow beyond the boundaries of the monitor. If historic data beyond this point needs to be visualized, the top part of the visualization can utilize an aggregation. For example if the more recent cells represent data in 1 minute segments, the aggregation can aggregate multiple minutes (e.g., 5) of data into one cell. Yet further up in the visualization, these 5-minute cells get aggregated into 15 minute, and finally 60 minute cells. Aggregation can be achieved in a variety of ways, depending on the feature represented. For example, if the feature simply shows presence/absence of a feature in the data, the aggregation might add the values from the 1 minute segments and represent the result as gray levels.

The Koike Reference:

The Koike interface uses a scale that is compressed at both ends of the slider window. Koike's limitations include that the interface uses a fine and linear scale in the center portion and only presents a fisheye view of a document. For example, the Koike scale depicts an indicated time span, and is described in the context of depicting a history of changes on a desktop. In another example, the user must grasp (i.e. select with a mouse button) and hold the slider bar for

a specified time to enable the movement of a desired point on the timeline into the central linear region of the scale. A summary window then appears after the user grasps the slider bar, and displays information about the desktop state or changes thereto. The Koike interface uses small marks on the time scale represent time points at which state changes occurred or points at which there are interesting items including search keywords.

The Mah Reference:

Mah teaches a funnel that is displayed to a user for analysis, which is generated from sequentially ordered data. The invention focuses the visualization of funnels on a number of select starting points in a linear manner. Mah then supports visualizing the data in a funnel report, which is a study of the clickpath and retention behavior among a series of pages or sites. Mah stores an input clickstream having an ordered path of successively viewed web pages in one or more tree structures. Mah provides measures of interestingness to determine whether a funnel is interesting, using depth and width criteria. Mah presents the funnel report visually in a hierarchical structure tree to allow an analyst to mine the funnel report.

Claim 1:

Claim 1 requires "generating a summary view that depicts structure of a dynamic document from a data stream." Koike does not teach generate summary views from data streams or any form of continuous data.

Claim 1 further requires that the "summary view comprises a plurality of rows, columns, and markers in a rectangular arrangement, each of said markers comprises content that represents frequency with which one of said search terms occur in a position of the dynamic document."

Koike teaches "a slider which allows users to specify a point in time by moving an indicator knob or clicking a point on the time scale" (see Koike at Column 1). Mah teaches a funnel report visualized in a hierarchical structure tree (see Mah at Column 3 lines 60 – Column 4 line 55; figures 6, 8, 10, and 16 – 17). In addition Koike provides "Small marks on the time scale represent the time points when the desktop state changes," which illustrates that the "markers" of Claim 1 are different from the "Small Marks" (tick marks) in Koike.

Claim 1 further requires "the summary view including distribution and frequency." Koike does not teach frequency, but is limited to representations of distribution in it's summary view (see Koike at Column 3).

Claim 1 further requires "triggering an enhancement of said summary view by cursor brushing a particular marker, said enhancement providing additional information of the structure of the dynamic document." Koike fails to teach using cursor brushing over a particular marker, because Koike uses a time slider with a time scale, rather than an abstract representation using a marker. In addition Mah fails to teach cursor brushing of markers in a representation.

Accordingly, Koike in view of Mah, fail to teach Claim 1. Claims 2 - 7 and 27 – 32 each depend directly or indirectly from Claim 1. Claim 23 is a computer program product claim directed towards analogous subject matter of claim 1. Claims 27 – 44 each depend directly or indirectly from Claim 23. Therefore, claims 2 – 7, 23, and 27 – 44 should be patentable for at least the same or similar reasons.

Claim 31:

Claim 31 requires the "abstract representation be nonlinear." Mah teaches away from an abstract representation being nonlinear. For example, Mah provides "The invention software

focuses the visualization of clickpaths or funnels on a number of select starting points in a relatively linear manner." Therefore, Mah teaches away from claim 31. Accordingly, Koike in view of Mah, fail to teach Claim 31. Claim 43 is a computer program product claim directed towards analogous subject matter of claim 31, and therefore should be patentable for at least the same or similar reasons.

Conclusion

The Applicants respectfully submit that the present application is in condition for allowance.

The examiner is requested to call the undersigned to schedule an interview.

The Commissioner is authorized to charge any fees that are due in connection with the filing of this paper to Deposit Account No. 09-0441.

Respectfully submitted,
Dieberger et al.

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By: /Mohammed Kashef/

Mohammed Kashef
Attorney for Applicants
Reg. No. 60,762

IBM Almaden Research Center
Intellectual Property Law
650 Harry Road, C4TA/J2B
San Jose, California 95120
Telephone: (408) 927-3380
Facsimile: (408) 927-3375
Kashef@us.ibm.com